Calculation of Organic HAP Emissions and Coating Solids Used

The organic HAP emissions for the facility "non-adhesive coating materials" were calculated based on the individual material usages, the densities of each material, and the speciated weight percent of each of the organic HAP components of the materials. With the exception of those facilities that reported the use of some type of add-on control device, it was assumed for the purposes of analysis that 100 percent of the organic HAP content of all materials used at the facility was emitted to the atmosphere.

To calculate the organic HAP emissions, for each material used at a facility, the facility-wide usage of that material in gallons was multiplied by the density of that material, in lb per gallon, to calculate the lb of that material used at the facility. The lb of material used was then multiplied by the weight percent of organic HAP to calculate the lb organic HAP emitted for each "non-adhesive coating material" used at a facility. The total lb of organic HAP from all materials at a facility that were included in the "non-adhesive coating materials" category were summed to calculate the total lb organic HAP emitted from non-adhesive coating operations at the facility. The organic HAP emissions from the adhesives operations and the equipment cleaning operations were done in the same manner.

The lb of non-adhesive coating solids used or the lb of adhesives coating solids used were calculated based on the individual material usages, the densities of each material, and the weight percent solids of each of the materials. To calculate the total lbs solids used for each facility, the facility-wide usage of that material in gallons was multiplied by the density of that material, in lb per gallon, to calculate the lb of that material used at the facility. The lb of material used was then multiplied by the weight percent solids of each material to calculate the lbs of solids in each material. The total lb of solids from all materials at a facility were summed to calculate the total lbs solids used for "non-adhesive coating materials" or adhesives.

The gallons of equipment cleaning materials used for each facility was developed by summing the usages, in gallons, of each individual cleaning material used at a facility. These usages were provided in Form H of the ICR survey and are assumed to be the usages of a material specific to equipment cleaning purposes only.

The total lb organic HAP emissions from adhesives, "non-adhesive coating materials" or equipment cleaning were divided by the lb solids used (for adhesives or "non-adhesive coating materials") or the gallons of cleaning material used to develop the facility-specific emission rates for each of the three components of the MACT floor.

One option being considered in the proposed standards would be an averaging option which would allow a facility to add organic HAP emissions of each MACT Floor component and then divide these organic HAP emissions by the lb solids from the non-adhesive coating materials.

Following are example calculations based on hypothetical values to assist each facility in determining their individual "lb organic HAP emitted/lb solids used" for non-adhesive and adhesive coating materials or "lb organic HAP emitted/gallons used" for cleaning materials. The

values represented are purely hypothetical and do not necessarily reflect any specific information from any individual facility. All references of HAP refers to organic HAP content.

EXAMPLE DATA AND CALCULATIONS FOR PLASTIC PARTS & PRODUCTS (SURFACE COATING) NESHAP
MACT FLOOR RANKINGS

Calculations for
LB MATERIAL USED = USAGE (gal) x DENSITY (lb/gal)
LB ORGANIC HAP EMITTED = LB MATERIAL USED x HAP CONTENT (Wgt %)
LB SOLIDS USED = LB MATERIAL USED x SOLIDS CONTENT (Wgt %)
FAC.-WIDE LB ORGANIC HAP EMITTED = SUM OF LB ORGANIC HAP EMITTED FROM EACH MATERIAL USED
FAC.-WIDE LB SOLIDS USED = SUM OF LB SOLIDS USED FROM EACH MATERIAL USED
LB ORGANIC HAP EMITTED/LB SOLIDS USED = FAC.-WIDE LB ORGANIC HAP EMITTED ÷ FAC.-WIDE LB SOLIDS USED

Facility A. Adhesive or Non-Adhesive Coating Materials (Includes Surf.Prep + Coating + Additive* Material)					
Material ID	Usage (gal) Form B + D (pg 1 of 2)	Density (lb/gal) Form B (pg 1 of 2)	Solids** Content (Wgt.%) Form B (pg 1 of 2)	HAP Content*** (Wgt.%) Form B (pg 2 of 2)	Thinning Ratio (parts thinner:parts supplied coating) Form B (pg 1 of 2)
MN5678	1955	8.3	28	0	NA
MN9123	124	8.23	32	15	1:1
MN9123-THINNER	124	6.61	0	15	NA

*Additive means any material added to an "as-supplied material"prior to substrate application (e.g., thinner, reactant, activator, etc.)
**Solids Content does not include Surface Preparation solids (e.g., solids from detergents)
***HAP Content refers to organic HAP Content

MN5678

LB MATERIAL USED: 1955 (gal) x 8.30 (lb/gal) = 16226.50 (LB MATERIAL USED)

LB ORGANIC HAP EMITTED: 16226.50 (LB MATERIAL USED) x 0.00 (HAP CONTENT (Wgt %) = 0.00 (LB ORGANIC HAP EMITTED)

LB SOLIDS USED: 16226.50 (LB MATERIAL USED) x .28 SOLIDS CONTENT (Wgt %) = 4543.42 (LB SOLIDS USED)

MN9123

LB MATERIAL USED: 124 (gal) x 8.23 (lb/gal) = 1020.52 (LB MATERIAL USED)

LB ORGANIC HAP EMITTED: 1020.52 (LB MATERIAL USED) x .15 (HAP CONTENT (Wgt %) = 153.08 (LB ORGANIC HAP EMITTED)

LB SOLIDS USED: 1020.52 (LB MATERIAL USED) x .32 SOLIDS CONTENT (Wgt %) = 326.57 (LB SOLIDS USED)

MN9123-ADDITIVE

LB MATERIAL USED: 124 (gal) x 6.61 (lb/gal) = 819.64 (LB MATERIAL USED)

LB ORGANIC HAP EMITTED: 819.64 (LB MATERIAL USED) x .15 (HAP CONTENT (Wgt %) = 122.95 (LB ORGANIC HAP EMITTED)

LB SOLIDS USED: 819.64 (LB MATERIAL USED) x .28 SOLIDS CONTENT (Wgt %) = 229.50 (LB SOLIDS USED)

FAC.-WIDE LB ORGANIC HAP EMITTED =

MN5678 0.00 (LB ORGANIC HAP EMITTED)
MN9123 + 153.08 (LB ORGANIC HAP EMITTED)
MN9123-THINNER + 122.95 (LB ORGANIC HAP EMITTED)
276.03 (FAC.-WIDE LB ORGANIC HAP EMITTED)

FAC.-WIDE LB SOLIDS USED =

MN5678 + 4543.42 (LB SOLIDS USED)
MN9123 + 326.57 (LB SOLIDS USED)
MN9123-THINNER + 229.50 (LB SOLIDS USED)
5099.49 (FAC.-WIDE LB SOLIDS USED)

LB ORGANIC HAP EMITTED/LB SOLIDS USED =

276.03 (FAC.-WIDE LB ORGANIC HAP EMITTED) ÷ 5099.49 (FAC.-WIDE LB SOLIDS USED) = **0.05 LB ORGANIC HAP EMITTED/LB SOLIDS USED**

Facility A. Cleaning Materials (Material used for Equipment Cleaning Purposes)				
Material ID	Usage (gal) Form H	Density (lb/gal) Form B (pg 1 of 2)	Solids** Content (Wgt.%) Form B (pg 1 of 2)	HAP Content*** (Wgt.%) Form B (pg 2 of 2)
MN9876	1500	7.10	0	28
MN5432	700	6.96	0	2

**Solids Content does not include Surface Preparation solids (e.g., solids from detergents)
***HAP Content refers to organic HAP Content

Calculations for
LB MATERIAL USED = USAGE (gal) x DENSITY (lb/gal)
LB ORGANIC HAP EMITTED= LB MATERIAL USED x HAP CONTENT (Wgt.%)
LB ORGANIC HAP EMITTED/GAL USED = LB ORGANIC HAP EMITTED ÷ USAGE (gal)

MN9876
LB MATERIAL USED: 1500 (gal) x 7.10 (lb/gal) = 10650 (LB MATERIAL USED)
LB ORGANIC HAP EMITTED: 10650 (LB MATERIAL USED) x .28 (HAP CONTENT (wgt.%)) = 2982 (LB ORGANIC HAP EMITTED)

MN5432
LB MATERIAL USED: 700 (gal) x 6.96 (lb/gal) = 4872 (LB MATERIAL USED)
LB ORGANIC HAP EMITTED: 4872 (LB MATERIAL USED) x .02 (HAP CONTENT (wgt.%)) = 97.44 (LB ORGANIC HAP EMITTED)

FAC.-WIDE LB ORGANIC HAP EMITTED = MN9876 2982.00 (LB ORGANIC HAP EMITTED)
MN9123 + 97.44 (LB ORGANIC HAP EMITTED)
3079.44 (FAC.-WIDE LB ORGANIC HAP EMITTED)

FAC.-WIDE GALLONS USED = MN9876 1500 (gal)
MN9123 + 700 (gal)
2200 (gal)

LB ORGANIC HAP EMITTED/GAL USED 3079.44 (FAC.-WIDE LB ORGANIC HAP EMITTED) ÷ 2200 (gal) = **1.4 LB ORGANIC HAP EMITTED/GAL USED**

Potential option for averaging

Non-Adhesive & Adhesive Coating Materials	FAC.-WIDE LB ORGANIC HAP EMITTED =	276.03
Cleaning Materials	FAC.-WIDE LB ORGANIC HAP EMITTED =	+ 3079.44
Total	FAC.-WIDE LB ORGANIC HAP EMITTED =	3355.47

Non-Adhesive Coating Materials	FAC.-WIDE LB SOLIDS USED =	5099.49

Potential Averaging Option

LB ORGANIC HAP EMITTED/LB NON-ADHESIVE SOLIDS USED =

3355.47 (FAC.-WIDE LB ORGANIC HAP EMITTED) ÷ 5099.49 (FAC.-WIDE LB SOLIDS USED) = 0.66